

Terrestrial biodiversity in the Antarctic region: history, evolution and contemporary conservation.

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Even now, terrestrial and freshwater life in Antarctica is surprisingly poorly known in detail. Most currently ice-free ground in Antarctica and on at least some of the surrounding sub-Antarctic islands would have been covered and scoured by glacial advances at the Last Glacial Maximum and previous maxima. However, as new baseline survey data have become available, in combination with modern molecular biological analysis, it has become clear that long-term persistence and regional isolation is a feature of the Antarctic terrestrial and freshwater biota whose generality has not previously been appreciated. This biota is dominated by cryptogams, microarthropods and other microinvertebrates, and microbial groups. Many of these have high levels of endemism, and all show strong evidence of long-term presence in Antarctica. As well as creating a new paradigm in which to consider the evolution and adaptation of Antarctic terrestrial and freshwater biota, this opens important new cross-disciplinary linkages in the fields of understanding the geological and glaciological history of the continent itself, and of the climatic and oceanographic process that can both lead to isolation and support colonisation processes. This new and more complex understanding of Antarctic biogeography also provides important practical challenges for management and conservation in the region, as required under the Antarctic Treaty System.